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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,207	10/16/2001	Hideo Miura	500.34397CV2	4397

20457 7590 09/10/2002

ANTONELLI TERRY STOUT AND KRAUS
SUITE 1800
1300 NORTH SEVENTEENTH STREET
ARLINGTON, VA 22209

EXAMINER

DANG, TRUNG Q

ART UNIT	PAPER NUMBER
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2823

DATE MAILED: 09/10/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

9m

Office Action Summary

Application No.

09/977,207

Applicant(s)

MIURA ET AL.

Examiner

Trung Q. Dang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 15-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

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1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunikiyo (U.S. Pat. No. 5,668,403) in view of Chiu et al. (U. S. Pat. No. 5,470,783), all of record.

The rejection is maintained as of record and is repeated herein.

Kunikiyo teaches a process for producing a semiconductor device comprises the steps of: forming an element isolation oxide film 7 on a silicon substrate by thermal oxidation using a patterned nitride film 3 as a mask; removing the nitride mask 3, and thereafter carrying out a heat-treatment at a temperature of 950 °C or more in a nitrogen atmosphere to relax stress in the isolation oxide film; and forming a gate oxide film, a source and a drain, electrode and wiring, and an insulating film so as to form a transistor. See Embodiment 1 and Fig. 7.

Kunikiyo differs from the claims in not disclosing that the thermal oxidation is carried out at the claimed temperature of 850 °C in an atmosphere of a gaseous mixture of hydrogen and oxygen or in an atmosphere of H₂O. However, Chiu teaches a field oxide is grown in a conventional wet oxidation environment of H₂O + O₂ or H₂ + O₂ at a nominal temperature of about 800 °C to about 1000 °C (col. 6, lines 6-9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to carry out the thermal oxidation of Kunikiyo under the condition taught by Chiu because such thermal process for forming the field

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oxide is conventional in the art, and the application of a known process to make the same would have been within the level of an artisan.

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321© may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 15-17 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 2 and 5 of U.S. Patent No. 6,326,284 in view of Chiu et al., all of record.

The rejection is maintained as of record and is repeated herein. Note that a typing error has been made in the previous office action in that the U.S' 284 should be mentioned in the conclusion of the rejection rather than Kunikiyo because the U.S' 284 was used in the rejection, not Kunikiyo. Typing is corrected in this office action, and no new ground of rejection is made.

Claims 2 and 5 of the U.S' 284 teach substantially the claimed invention except for the limitation concerning the thermal oxidation is carried out in an atmosphere of a gaseous mixture

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of hydrogen and oxygen or in an atmosphere of H_2O . However, Chiu teaches a field oxide is grown in a conventional wet oxidation environment of $H_2O + O_2$ or $H_2 + O_2$ at a nominal temperature of about 800 °C to about 1000 °C (col. 6, lines 6-9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to carry out the thermal oxidation of the U.S' 284 under the condition taught by Chiu because such thermal process for forming the field oxide is conventional in the art, and the application of a known process to make the same would have been within the level of an artisan.

3. Claims 18-27 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Newly added independent claims 18 and 23 contain a limitation "forming an element-separating oxide film on the silicon substrate in the element separating area after removing at least another part of the oxidation-preventing film" (emphasis added). Such was not disclosed in the specification as originally filed. This is a new matter rejection.

4. Applicant's arguments filed 7-1-2002 have been fully considered but they are not persuasive.

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In page 7 of the Remarks, applicants argue that in Kunikiyo the nitrogen atmosphere in the heat treatment step is not an "inert atmosphere" as required by the present claims since the nitrogen participates in the heat treatment. The Examiner disagrees. As shown in Figures 8 and 9 and the related text (line 35 of col. 8 to line 8 of col. 9), nitrogen does not participate in the heat treatment since silicon oxynitride is not formed as a result of the heat treatment. Accordingly, the nitrogen atmosphere in Kunikiyo is an inert atmosphere.

As for the double patterning rejection, applicants argue that the heat treatment step in Chiu is conducted in an oxidation atmosphere after formation of LOCOS, which is quite different from the heat treatment used in the present invention as claimed. Applicants' argument seem not directed to the substance mentioned in the rejection. In the rejection, the Examiner relied on Chiu's reference for the teaching that the thermal oxidation for forming the element-separating oxide (field oxide) is known in the art to be carried out in an atmosphere of $H_2O + O_2$ or $H_2 + O_2$. The heat treatment step of the pending claims is met by claims 2 and 5 of the U. S. Pat. 6,326,284, not Chiu.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trung Dang whose telephone number is (703) 308-2548. The examiner can normally be reached on weekdays from 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached on (703) 308-4918. The fax phone number for this Group is (703) 305-3432 or (703) 308-7725.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'Trung Dang', with a stylized, cursive script.

Trung Dang

Primary Examiner, Group 2800